Space Weather Forecast

Issued on Thursday 20 February 2025 at 00:14 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with only occasional common class flares observed. There are seven sunspot regions on the Earth-facing disc, however these are all small and simple, with the most notable being the two regions in the southeast. However have both been inactive, with little growth or magnetic complexity.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed. However a filament, which is a line of plasma held above the Sun's surface by its magnetic field, was observed undergoing a disruption around 19/1900 UTC. These disruptions can be a source of CMEs, however imagery is currently not available to assess if one has occurred.

Solar Wind / Geomagnetic Activity: Easing fast solar winds were observed, but with the additional enhancement from one or more weak CME glances. Solar winds were slightly elevated at 450km/s at first, then gradually rose to be elevated at near 550km/s by 19/0200 UTC, before erratically easing to be slightly elevated at 450-500km/s from 19/0900 UTC. Interplanetary Magnetic Field was Weak to Moderate but with a gradual easing trend, to be mainly Weak from 19/1030UTC. The north-south component rotated from being Moderate southward until 19/0800 UTC to be mainly Moderate northward until 15/1540 UTC, to then be mainly Moderate southward again thereafter. Geomagnetic activity was Quiet to Active (Kp1-4), but with one G1 Minor Storm interval (Kp5) 19/0000-0300 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be generally Low, with a chance of isolated Moderate class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs, although this may change based upon assessments of the filament disruption centre disc at 19/1900 UTC, once imagery is available. Otherwise, slightly elevated solar winds will gradually ease towards background. Geomagnetic activity is forecast to be Quiet with Unsettled intervals and a slight chance of Active intervals at first.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to persist at background levels.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	5	1	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	40	40	50	50
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	2	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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